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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,797	07/30/2003	David Chao Hua Wu	1875.4730000	9430
26111	7590	07/28/2006	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			DO, CHAT C	
			ART UNIT	PAPER NUMBER
			2193	

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/629,797	Applicant(s) WU, DAVID CHAO HUA	
	Examiner Chat C. Do	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003 and 02 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/30/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1, 10-11, and 20 are objected to because of the following informalities:

Re claim 1, the applicant is advised to rewrite the term “FM” in line 1 as “frequency modulation (FM)” for clarification.

Re claims 10-11 and 20 have the same objection as seen in claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims {1-10 and 20} and {11-19} disclose a method and system respectively for approximating $1/x(n)$ according to a mathematical algorithm. In order for claims to be statutory, claims must include a practical application at useful end to produce a useful, concrete, and tangible result. However, claims 1-20 merely disclose mathematical steps of computing an approximation $1/x(n)$ with compensated error without regarding a practical application to produce a tangible result. The result of computation of $1/x(n)$ as outputting would not a tangible result. Therefore, claims 1-20 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 4, 6, 8, 10-12, 14, 16, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Simanapalli et al. (U.S. 6,002,726).

Re claim 1, Simanapalli et al. disclose in Figures 2-3 a method for approximating $y(n)=1/x(n)$ in FM demodulation (e.g. abstract, part 78 in Figure 3 wherein $r(n+1)$ is $y(n)$, and col. 5 lines 40-55), where $x(n)=I.\text{sup.}2(n)+Q.\text{sup.}2(n)$ (e.g. part 76 in Figure 3 and col. 4 lines 10-14), comprising: (a) receiving a prior estimated value of $1/x(n)$ (e.g. Figures 2-3 wherein $r(n)$ is fed/computed from Figure 2 into Figure 3, col. 4 lines 17-55 wherein the initial $1/x(n)$ is computed directly in either third box or box 62 in Figure 2 for used in the next computation); (b) receiving a present value of $x(n)$ (e.g. part 74 in Figure 3 and col. 5 lines 26-30 wherein the $x(n)$ is $x(n+1)$); (c) adjusting the prior estimated value of $1/x(n)$ to compensate for an error between the prior estimated value of $1/x(n)$ and the present value of $1/x(n)$ (e.g. col. 5 lines 33-64, particularly expression in line 50); and (d) outputting the adjusted prior estimated value of $1/x(n)$ as the present value of $1/x(n)$ (e.g. expression line 50 in col. 5 and output of box 78 in Figure 3 wherein generally the $\{n\}$ is prior value of present value $\{[n]+1\}$).

Re claim 2, Simanapalli et al. further disclose in Figures 2-3 the prior estimated value of $1/x(n-1)$ equals $1/(I.\text{sup.}2(n-1)+Q.\text{sup.}2(n-1))$ (e.g. part 52 in Figure 2 and col. 4 lines 9-14), wherein $I(n)$ is an input signal and $Q(n)$ is a quadrature-phase signal of the input signal $I(n)$ (e.g. col. 1 lines 15-30, col. 2 lines 20-25, and col. 4 lines 5-10).

Re claim 4, Simanapalli et al. further disclose in Figures 2-3 the present value $x(n)$ equals $I.\text{sup.}2(n)+Q.\text{sup.}2(n)$ (e.g. part 76 in Figure 3 and col. 5 lines 29-33), and wherein $I(n)$ is an input signal and $Q(n)$ is quadrature-phase signal of $I(n)$ (e.g. col. 1 lines 15-30, col. 2 lines 20-25, and col. 4 lines 5-10).

Re claim 6, Simanapalli et al. further disclose in Figures 2-3 an error signal equals $(1-x(n)y(n-1))a$ (e.g. col. 1 lines 40-55, col. 5 lines 35-64, wherein a is equate to $1/x[n-1]$ then mathematically expression in line 50 met the limitation above), wherein $x(n)=I.\text{sup.}2(n)+Q.\text{sup.}2(n)$ (e.g. part 52 in Figure 2), $y(n-1)=1/(I.\text{sup.}2(n-1)+Q.\text{sup.}2(n-1))$ (e.g. output of part 62 in Figure 2), $I(n)$ is an input signal, $Q(n)$ is a quadrature-phase signal of the input signal $I(n)$ (e.g. col. 1 lines 15-30), and " a " is a scaling coefficient (e.g. col. 1 lines 40-55, col. 5 lines 35-64, wherein a is equate to $1/x[n-1]$ then mathematically expression in line 50 met the limitation above).

Re claim 8, Simanapalli et al. further disclose in Figures 2-3 the $Y(n)$ signal equals $y(n-1)+(1-x(n)(y(n-1)))a$ (e.g. col. 1 lines 40-55, col. 5 lines 35-64, wherein a is equate to $1/x[n-1]$ then mathematically expression in line 50 met the limitation above), wherein $x(n)=I.\text{sup.}2(n)+Q.\text{sup.}2(n)$ (e.g. part 52 in Figure 2), $y(n-1)=1/(I.\text{sup.}2(n-1)+Q.\text{sup.}2(n-1))$ (e.g. output of part 62 in Figure 2), $I(n)$ is an input signal, $Q(n)$ is a quadrature-phase signal of the input signal $I(n)$ (e.g. col. 1 lines 15-30), and " a " is a

Art Unit: 2193

scaling coefficient (e.g. col. 1 lines 40-55, col. 5 lines 35-64, wherein a is equal to $1/x[n-1]$ then mathematically expression in line 50 met the limitation above).

Re claim 10, Simanapalli et al. disclose in Figures 2-3 a method for demodulating an FM signal $FM(n)$ (e.g. abstract and col. 1 lines 13-30) from a secondary audio program signal (e.g. this limitation has not been given patentable weight because the recitation occurs in the preamble), comprising: (a) receiving in-phase $I(n)$ and quadrature-phase $Q(n)$ portions of the $FM(n)$ signal (e.g. part 50 in Figure 2 and part 74 in Figure 3, and col. 1 lines 15-30); (b) generating a first portion of the $FM(n)$ signal that is equal to $I(n)Q(n) - I(n)Q(n)$ (e.g. part 56 in Figure 2, parts 72 and 80 in Figure 3, col. 1 lines 60-65, and col. 5 lines 54-62); (c) determining a value $z(n)$ based on the first portion of the $FM(n)$ signal (e.g. part 56 in Figure 2, parts 72 and 80 in Figure 3, col. 1 lines 60-65); and (d) generating a second portion of the $FM(n)$ signal that is equal to $1/I(n)^2 + Q(n)^2$, wherein $1/I(n)^2 + Q(n)^2$ is equal to $x(n)$ (e.g. col. 5 lines 30-32) and $y(n) = 1/x(n)$ (e.g. parts 76-78 in Figure 3 and col. 5 lines 30-50); (e) generating a value for $y(n)$ based on $1/x(n)$ that equals $y(n-1) + (1-x(n)y(n-1))a$ (e.g. col. 1 lines 40-55, col. 5 lines 35-64, wherein a is equal to $1/x[n-1]$ then mathematically expression in line 50 met the limitation above); and (f) multiplying the $z(n)$ value and the $y(n)$ value to produce the $FM(n)$ signal (e.g. part 80 in Figure 3).

Re claim 11, it is a system claim of claim 1. Thus, claim 11 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 12, it is a system claim of claim 2. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

Re claim 14, it is a system claim of claim 4. Thus, claim 14 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Re claim 16, it is a system claim of claim 6. Thus, claim 16 is also rejected under the same rationale as cited in the rejection of rejected claim 6.

Re claim 18, it is a system claim of claim 8. Thus, claim 18 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

Re claim 20, it has same limitations cited in claim 1. Thus, claim 20 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 5, 7, 9, 13, 15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being obvious over Simanapalli et al. (U.S. 6,002,726) in view of Trimbee et al. (U.S. Publication No. US 2003/0085993).

Re claim 3, Simanapalli et al. further disclose in Figures 2-3 the input signal is the based-band signal, but fail to disclose the input signal I(n) comprises a band pass filtered secondary audio program signal. However, Trimbee et al. disclose in Figure 1 the input signal I(n) comprises a band pass filtered secondary audio program signal (e.g. paragraphs [0003] and [0018]). Therefore, it would have been obvious to a person

having ordinary skill in the art at the time the invention is made to add the input signal as a band pass filtered secondary audio program signal as seen in Trimbee et al.'s invention into Simanapalli et al.'s invention because it would enable to deliver conveniently and inexpensively audio program to vision impaired persons (e.g. col. 1 paragraphs [0002] and [0003] last 5 lines).

Re claim 5, it has same limitations cited in claim 3. Thus, claim 5 is also rejected under the same rationale as cited in claim 3.

Re claim 7, it has same limitations cited in claim 3. Thus, claim 7 is also rejected under the same rationale as cited in claim 3.

Re claim 9, it has same limitations cited in claim 3. Thus, claim 9 is also rejected under the same rationale as cited in claim 3.

Re claim 13, it is a system claim of claim 3. Thus, claim 13 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 15, it is a system claim of claim 5. Thus, claim 15 is also rejected under the same rationale as cited in the rejection of rejected claim 5.

Re claim 17, it is a system claim of claim 7. Thus, claim 17 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

Re claim 19, it is a system claim of claim 9. Thus, claim 19 is also rejected under the same rationale as cited in the rejection of rejected claim 9.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 4,893,316 to Jane et al. disclose a digital radio frequency receiver.
- b. U.S. Patent No. 6,337,878 to Endres et al. disclose an adaptive equalizer with decision directed constant modulus algorithm.
- c. U.S. Patent No. 6,370,191 to Mahant-Shetti et al. disclose an efficient implementation of error approximation in blind equalization of data communications.
- d. U.S. Patent No. 5,949,821 to Emami et al. disclose a method and apparatus for correcting phase and gain imbalance between in-phase (I) and quadrature (Q) components of a received signal based on a determination of peak amplitudes.
- e. U.S. Patent No. 7,006,806 to Wu et al. disclose a system and method for SAP FM demodulation.
- f. U.S. Patent No. 6,154,483 to Davidovici et al. disclose a coherent detection using matched filter enhanced spread spectrum demodulation.
- g. U.S. Patent No. 6,463,452 to Schulist discloses a digital value processor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2193

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

July 20, 2006

A handwritten signature in black ink, appearing to read 'Chat C. Do', with a long horizontal flourish extending to the right.